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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,502

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Paul Nicholls

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EXAMINER

VERBITSKY, GAIL KAPLAN

ART UNIT

PAPER NUMBER

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MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,502	<b>Applicant(s)</b> NICHOLLS ET AL.	
	<b>Examiner</b> Gail Verbitsky	<b>Art Unit</b> 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

In view of the arguments presented by Applicant in the Appeal Brief filed on December 07, 2009, PROSECUTION IS HEREBY REOPENED.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) File a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Lisa M. Caputo/

Supervisory Patent Examiner, Art Unit 2855

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 7, 11, 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1: the claim language is confusing because it is not clear if the “control unit” is a part of the “vessel”, as claimed in claim 1, or a separate structure, as shown in the drawings.

Claims 7, 11, 13-15: In this case, it appears that the claims listed above are directed to method steps while they are dependent on the apparatus claim. Therefore, the claims 7, 11, 13-15 are indefinite because it is not clear what applicant intends to claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18, 20, 23, 25, 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by lida et al. (U.S. 5356220) [hereinafter lida].

lida discloses in Fig. 10 a device/ a reaction vessel comprising body (vessel wall); a distributed temperature fiber for monitoring temperature in the body/ wall and comprising an optical fiber positioned around the body;

a control unit; the optical fiber extending such that they provide a temperature profile of temperatures in the body /wall, wherein a process is performed within the vessel; and the control unit automatically controls (by automatically opening a plurality of valves to allow sprinkles to cool the body/ wall) parameters/ temperature in the body/ wall depending on the temperature profile to ensure that the process is within an acceptable range.

In addition, lida states that the optical fiber could be positioned within a stainless pipe (conduit), col. 10, lines 61-62.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 10, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (U.S. 5356220) [hereinafter Iida] in view of DeBruin (U.S. 20080312406).

Iida discloses in Fig. 10 a device/ a reaction vessel comprising body (vessel wall); a distributed temperature fiber for monitoring temperature in the body/ wall and comprising an optical fiber positioned around the body;

a control unit; the optical fiber extending such that they provide a temperature profile of temperatures in the body /wall, wherein a process is performed within the vessel; and the control unit automatically controls (by automatically opening a plurality of valves to allow sprinkles to cool the body/ wall) parameters/ temperature in the body/ wall depending on the temperature profile to ensure that the process is within an acceptable range. Iida states that the fiber could be positioned within a stainless pipe (conduit), col. 10, lines 61-62.

Iida does not explicitly teach that the vessel has a tray, an outer weirs and downcomer within the body.

DeBruin states that some reactors, especially ester exchange reactors have such internals as weirs, trays, downcomers, and also need temperature control, and thus knowledge of temperature inside reactor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Iida so as to obtain temperature measuring of the vessel having weirs, trays, downcomers, because these vessels also need to have their temperature assessed and controlled.

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Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over lida and DeBruin, as applied to claims 1-5,10, 16 above, and further in view of Hartog et al. (U.S. 5821861) [hereinafter Hartog].

lida and DeBruin disclose the device/ method as stated above.  
They do not teach the limitations of claims 6-7.

Hartog discloses in Figs. 1-3 a device/ method in the field of applicant's endeavor and teaches that installation of the optical fiber could be performed by directing jets of fluid (fluid drag) (col. 1, lines 59-67). Hartog teaches that the conduit with the fiberoptic could be positioned either outside the wall or inside the wall.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by lida and DeBruin, so as to install the fiberoptic in the pipe by using fluid drag, as taught by Hartog, in order to protect the fiber optic from damage due to friction during insertion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by lida and DeBruin, so as to embed the conduit with the fiberoptic within the wall, as taught by Hartog, in order to minimize its protrusion from the wall and thus, protect it from a physical damage.

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over lida in view of Hartog et al. (U.S. 5821861) [hereinafter Hartog].

lida discloses the device/ method as stated above.  
lida does not teach the limitations of claims 21-22.

Hartog discloses in Figs. 1-3 a device/ method in the field of applicant's endeavor and teaches that installation of the optical fiber could be performed by directing jets of fluid (fluid drag) (col. 1, lines 59-67). Hartog teaches that the conduit with the fiberoptic could be positioned either outside the wall or inside the wall.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by lida, so as to install the fiberoptic in the pipe by using fluid drag, as taught by Hartog, in order to protect the fiber optic from damage due to friction during insertion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by lida, so as to embed the

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conduit with the fiberoptic within the wall, as taught by Hartog, in order to minimize its protrusion from the wall and thus, protect it from a physical damage.

Claims 24, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Mercer (U.S. 2499105).

Iida discloses the device as stated above.

Iida does not explicitly teach the limitations of claims 24, 26-29.

Anderson teaches that a fiberoptic sensor for sensing both pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida in the distillation vessel, and use to obtain pressure data also, because, according to Anderson it is important to obtain temperature and pressure of the distillation vessel during the distillation process.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Mercer, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameters, and having a plurality of valves. With respect to the particular positioning of the inlet/ outlet: it was held that there would be no invention in shifting the inlet/ outlet disclosed by

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Mercer to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida in the distillation vessel, as taught by Anderson and Mercer, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Mercer.

Claims 9, 11-15 (claims 11, 13-15 – as best understood by the Examiner) as being unpatentable over Iida and DeBruin, as applied to claims 1-7, 10, 16 above, and further in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Mercer (U.S. 2499105).

Iida and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 9, 11-15.

Anderson teaches that a fiberoptic sensor for sensing both pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida and DeBruin in the distillation vessel, and use to obtain pressure data also, because, according to Anderson it is important to obtain temperature and pressure of the distillation vessel during the distillation process. With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Mercer, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process



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comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameters, and having a plurality of valves. With respect to the particular positioning of the inlet/ outlet: it was held that there would be no invention in shifting the inlet/ outlet disclosed by Mercer to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida and DeBruin in the distillation vessel, as taught by Anderson and Mercer, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Mercer.

Claims 24, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida in view of Chuang et al. (U.S. 7211702) [hereinafter Chuang] and Camson.

Iida discloses the device as stated above.

Iida does not explicitly teach the limitations of claims 24, 26-29.

Chuang discloses a device wherein a reactor vessel is a part of a distillation column/ system (having stages) and the temperature and pressure of the vessel is controlled by valves and automatic controllers. Chuang controls the process parameters to keep them within acceptable range. The device is concerned with separating of the components.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device of Iida in a distillation system of Chuang because the parameters of the system

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of Chuang are also needed to be measured and controlled, as already suggested by Chuang.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by the Prior Art to a different position depending what process is being performed in the distillation system, since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Claims 9, 11-15 (claims 11, 13-15 – as best understood by the Examiner) are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida and DeBruin, as applied to claims 1-5, 10, 16 above, and further in view of Chuang et al. (U.S. 7211702) [hereinafter Chuang] and Camson.

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Iida and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 9, 11-15.

Chuang discloses a device wherein a reactor vessel is a part of a distillation column/ system (having stages) and the temperature and pressure of the vessel is controlled by valves and automatic controllers. Chuang controls the process parameters to keep them within acceptable range. The device is concerned with separating of the components.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device of Iida and DeBruin in a distillation system of Chuang because the parameters of the system of Chuang are also needed to be measured and controlled, as already suggested by Chuang.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation

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phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by the Prior Art to a different position depending what process is being performed in the distillation system, since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Claims 24, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over lida in view in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Gamson (U.S. 3440865).

lida discloses the device as stated above.

lida does not explicitly teach the limitations of claims 24, 26-29.

Anderson teaches that a fiberoptic sensor for sensing pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by lida in the distillation vessel, because it is known in the art and admitted by Anderson that the fiber optical temperature/ pressure sensor could be used in the distillation vessel in order to determine/ control its temperature and pressure along the vessel.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and

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inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by Gamson to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by lida in the distillation vessel, as taught by Anderson and Gamson, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Gamson.

Claims 9, 11-15 (claims 11, 13-15 – as best understood by the Examiner) are rejected under 35 U.S.C. 103(a) as being unpatentable over lida and DeBruin, as applied to claim 1-7, 10, 16 above, and further in view in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Gammon (U.S. 3440865).

lida and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 9, 11-15.

Anderson teaches that a fiber optic sensor for sensing pressure and temperature could be used along with a distillation vessel.

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Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida and DeBriun in the distillation vessel, because it is known in the art and admitted by Anderson that the fiber optical temperature/ pressure sensor could be used in the distillation vessel in order to determine/ control its temperature and pressure along the vessel.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gammon, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gammon describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gammon teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by Gammon to a different position since the operation of the device would not thereby be modified. See In re Janise, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Iida and DeBriun in the distillation vessel, as taught by Anderson and

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Gammon, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Gammon.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-7, 9-16, 18, 20-31 have been considered and found to be persuasive.

The prosecution is now reopened; therefore, the previous rejections are now moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571/ 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)?

*Gail Verbitsky*  
*Primary Patent Examiner, TC 2800*

March 10, 2010

/Gail Verbitsky/  
Primary Examiner, Art Unit 2855